WATER RESOURCES REVIEW for

FEBRUARY

1974

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

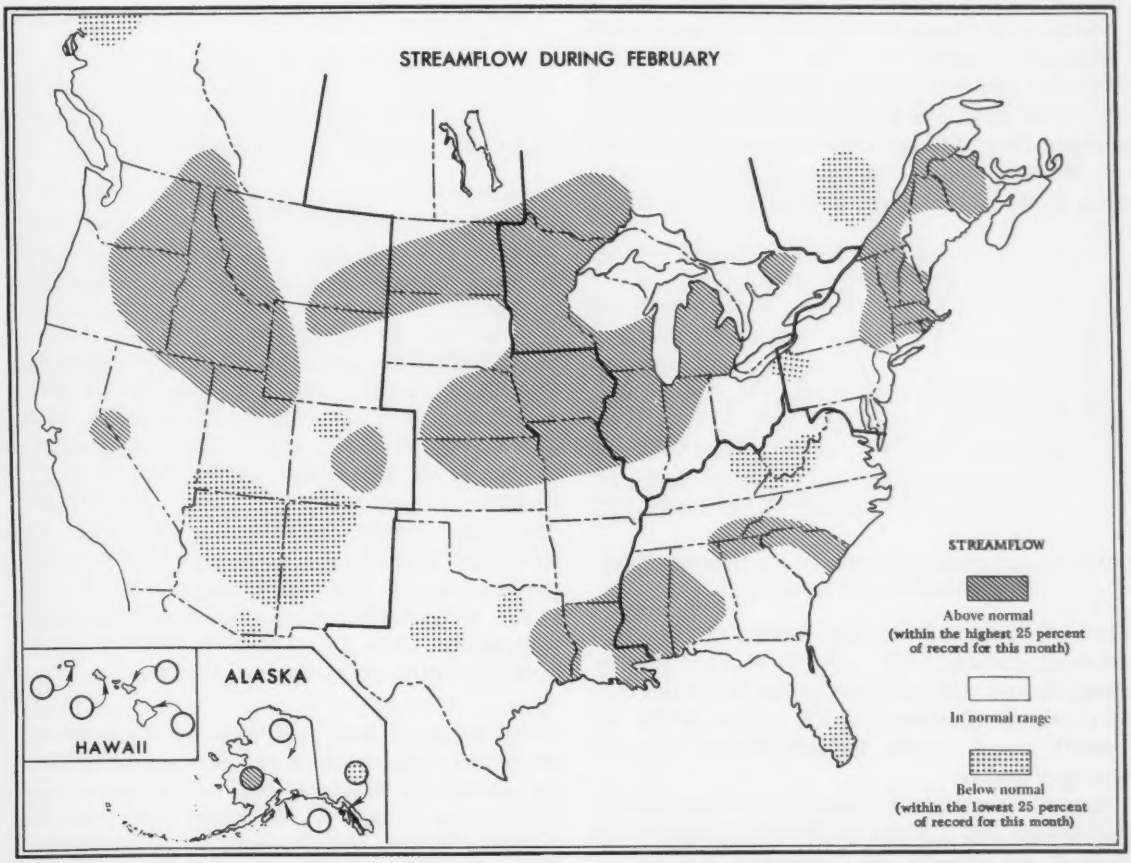
CANADA
DEPARTMENT OF THE ENVIRONMENT
WATER RESOURCES BRANCH

STREAMFLOW AND GROUND-WATER CONDITIONS

Streamflow decreased in most of the United States and southern Canada but generally increased in Hawaii, in some north-central and southeastern States, and in parts of British Columbia and the Atlantic Provinces in Canada.

Monthly mean flows remained above the normal range in large areas in north-central and northwestern United States, including parts of Ontario and British Columbia in southern Canada. Monthly mean discharge of Mississippi River at Vicksburg, Mississippi, was more than twice the February median and above the normal range for the seventh consecutive month. Flows were below normal in a large area centered on east-central Arizona.

Flooding occurred in parts of Louisiana and North Carolina.



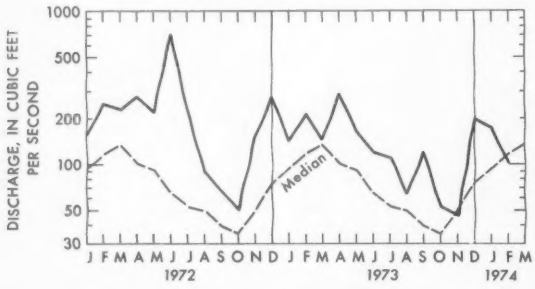
NORTHEAST

[Atlantic Provinces and Quebec; Delaware, Maryland, New York, New Jersey, Pennsylvania, and the New England States]

STREAMFLOW GENERALLY DECREASED EXCEPT IN PARTS OF NEW BRUNSWICK, NOVA SCOTIA, AND NEW YORK, WHERE FLOWS INCREASED. FLOWS REMAINED ABOVE THE NORMAL RANGE IN NORTHERN NEW BRUNSWICK AND IN MOST PARTS OF THE NEW ENGLAND STATES, WERE BELOW NORMAL IN SOUTH-CENTRAL QUEBEC, AND DECREASED INTO THE BELOW-NORMAL RANGE IN NORTHWESTERN PENNSYLVANIA.

With the exception of parts of Maine, New Hampshire, Vermont, and Connecticut, streamflow remained in the above-normal range in the New England States for the 3d consecutive month. Cumulative runoff during the 3-month period was more than double the median flows for the period at most index stations.

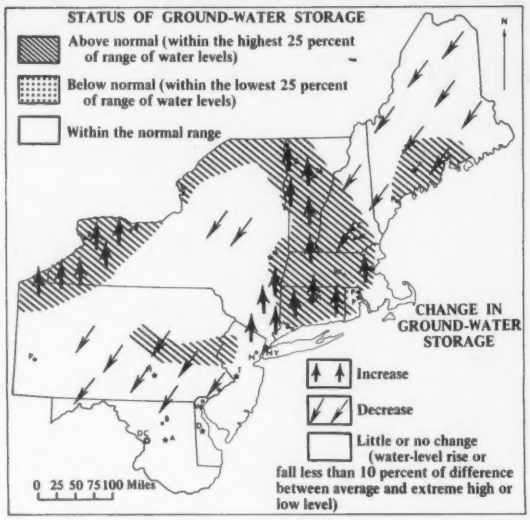
In the southern and western parts of the region, where streamflow remained above the normal range during December and January, flows generally decreased into the normal range, and were near or below the February medians. Flow of Seneca Creek at Dawsonville, in western Maryland, was representative of streamflow conditions in the smaller basins in those areas (see graph).



Monthly mean discharge of Seneca Creek at Dawsonville, Md. (Drainage area, 101 square miles.)

Flow of Potomac River near Washington, D.C. also decreased contraseasonally, was less than half the flow during January, and was below median for the first time in 11 months. Cumulative runoff at that site for the 5-month period, October through February, was 168 percent of median.

Ground-water levels declined in most of Maryland and Pennsylvania, and in Maine and New Hampshire in New England; and generally rose elsewhere in New England (see map). Monthend levels remained above the normal range in most of central and southern New England, and



Map above shows ground-water storage near end of February and change in ground-water storage from end of January to end of February.

were above normal also in south-central Maine, east-central Pennsylvania, and extreme western and northeastern New York. Elsewhere in the region, levels were mainly near average for end of February.

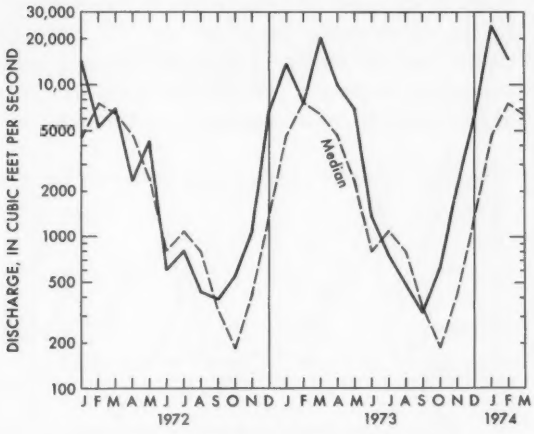
SOUTHEAST

[Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia]

STREAMFLOW GENERALLY DECREASED EXCEPT IN PARTS OF THE CAROLINAS AND ALABAMA, WHERE FLOWS INCREASED AND REMAINED IN THE ABOVE-NORMAL RANGE. FLOWS ALSO REMAINED ABOVE THE NORMAL RANGE IN MISSISSIPPI AND NORTHERN GEORGIA. MINOR FLOODING OCCURRED IN WESTERN NORTH CAROLINA. MONTHLY MEAN DISCHARGE OF MISSISSIPPI RIVER AT VICKSBURG, MISSISSIPPI, INCREASED SLIGHTLY AND WAS MORE THAN DOUBLE THE MEDIAN FLOW FOR THE THIRD CONSECUTIVE MONTH.

High carryover flows from January, augmented by moderate to large amounts of rain scattered through the month of February, held streamflow in the above-normal range in Mississippi and parts of Alabama, Georgia, and the Carolinas. In west-central Mississippi, flow of Big Black River at Bovina decreased but was nearly double the February median, and remained above the normal range for the

5th consecutive month (see graph). In northern Georgia and the adjacent area of western North Carolina,



Monthly mean discharge of Big Black River at Bovina, Miss. (Drainage area, 2,810 square miles.)

monthly mean flows remained in the above-normal range for the 3d consecutive month. In southern Alabama and northeastern South Carolina, flows increased and were above the normal range for the first time in 7 months. Heavy rains in western North Carolina caused some low-land flooding February 22.

In Tennessee, where monthly mean streamflow at the three index stations was 3 to 4 times normal during January, flows decreased sharply and averaged only about 20 percent above the combined median flows for February. The combined flows at those stations for the 3-month period, November through January, was more than 3 times the median cumulative flow for the period. In the adjacent area of extreme western Virginia, streamflow also decreased sharply, from more than 3 times median in January to near median for February, and was in the normal range for the 1st time in 5 months.

In extreme northwestern Florida, the monthly mean flow of 2,720 cfs on Shoal River near Crestview (drainage area, 474 square miles) was highest for the month since records began in 1938. This is the 2d consecutive month of record-high monthly mean discharge at this station. In north-central Florida, flow of Silver Springs decreased 25 cfs, to 645 cfs; 86 percent of normal. In the central and southern parts of the State, flows generally decreased and were near or in the below-normal range. Flow of Peace River at Arcadia decreased contraseasonally and was only 49 percent of the February median. In southwestern Florida, flow southward through the Tamiami Canal outlets, 40-mile bend to Monroe, decreased to 2.26 cfs; 9 percent of normal, and in the southeast, flow of Miami Canal at Miami decreased 59 cfs, to 95 cfs; 34 percent of normal.

Ground-water levels declined in most wells in Kentucky, West Virginia, North Carolina, and Florida; and generally rose elsewhere in the region. An exception to the downward trend in Kentucky was the water level in the observation well in an unpumped area southwest of Louisville where the level was at an alltime high in nearly 30 years of record. Monthend levels were above average in most of Alabama, Kentucky (except in the shallow limestone aquifer in the central part of the State), in the Piedmont and Coastal Plain areas of North Carolina, and in west-central and northeastern West Virginia. Levels were below average elsewhere in West Virginia.

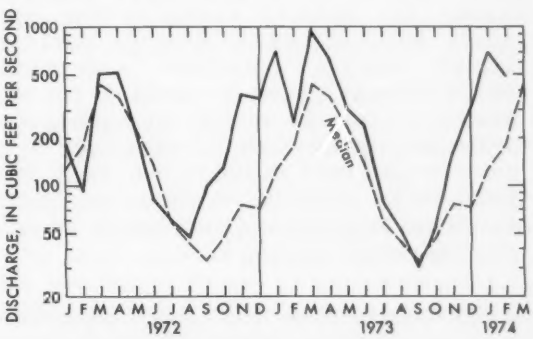
WESTERN GREAT LAKES REGION

[Ontario; Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin]

STREAMFLOW GENERALLY DECREASED FROM THE HIGH FLOWS OF JANUARY BUT REMAINED ABOVE THE NORMAL RANGE IN PARTS OF ONTARIO, MICHIGAN, ILLINOIS, AND MINNESOTA. FOR THE FIFTH CONSECUTIVE MONTH, MONTHLY MEAN FLOWS WERE IN OR ABOVE THE NORMAL RANGE IN ALL PARTS OF THE REGION.

In northern Illinois, flow of Pecatonica River at Freeport increased, was nearly 3 times the February median, and in the above-normal range for the 19th consecutive month. In east-central Illinois, and the adjacent area of west-central Indiana, flow of Wabash River was more than double the median for February and above the normal range.

In southern Michigan, monthly mean flow of Red Cedar River at East Lansing decreased from the high flow of January, remained above the normal range for the 4th consecutive month, and was nearly 3 times the February median (see graph).



Monthly mean discharge of Red Cedar River at East Lansing, Mich. (Drainage area, 355 square miles.)

In Minnesota, monthly mean flows at the index stations, Buffalo River near Dilworth, in the west, and Crow River at Rockford, in the east-central part of the State, remained above the normal range for the 6th consecutive month. Cumulative runoff at Rockford since the beginning of the current water year (October 1, 1973) has been about 13 times the median cumulative runoff for that 5-month period. Flows of Mississippi River at St. Paul and Minnesota River at Jordan remained above the normal range for the 5th consecutive month.

In eastern Wisconsin, flow of Fox River at Rapide Croche Dam, near Wrightstown, increased seasonally, was 153 percent of the February median, and above the normal range.

In southwestern Ontario, monthly mean flow of English River at Umfreville decreased seasonally but remained in the above-normal range for the 4th consecutive month.

Ground-water levels generally rose in southern Michigan; remained the same in northern Minnesota; and declined in southern Minnesota, northern Michigan, and in Ohio. Monthend levels were again above average in Ohio, Michigan, and northern Minnesota; were near average in Indiana; and were below average in southern Minnesota. In the Minneapolis-St. Paul area, levels in wells tapping artesian aquifers declined slightly and remained below average.

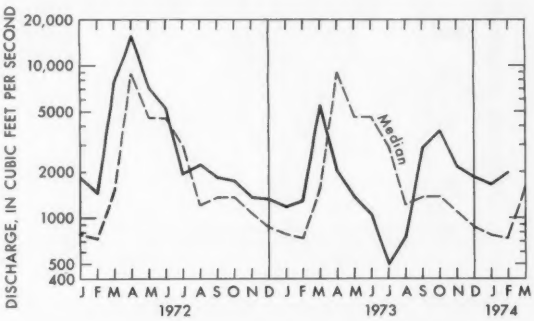
MIDCONTINENT

[Manitoba and Saskatchewan; Arkansas, Iowa, Kansas, Louisiana, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Texas]

STREAMFLOW DECREASED IN TEXAS, LOUISIANA, MISSOURI, AND SOUTHERN MANITOBA, AND WAS VARIABLE ELSEWHERE IN THE REGION. FLOWS GENERALLY REMAINED ABOVE THE NORMAL RANGE IN THE FOUR-STATE CENTRAL AREA, AND IN PARTS OF NORTH DAKOTA, LOUISIANA, AND TEXAS. BELOW-NORMAL FLOWS PERSISTED IN CENTRAL TEXAS. AT BATON ROUGE, LOUISIANA, THE MISSISSIPPI RIVER CRESTED FEBRUARY 15 AT 39.0 FEET, 4.0 FEET ABOVE FLOOD STAGE, THEN RECEDED TO BANKFULL STAGE AT MONTHEND. FLOODING CONTINUED ALONG BLACK RIVER IN NORTHEASTERN LOUISIANA.

High carryover flows from January, augmented by snowmelt runoff, contributed to the above-normal monthly mean discharges in parts of North Dakota, Iowa, Nebraska, Kansas, and Missouri.

In eastern North Dakota, monthly mean flow of Red River of the North at Grand Forks increased, remained in the above-normal range for the 5th consecutive month, and was roughly 3 times the February median (see graph). In the southwestern part of the State, unseasonal snowmelt runoff resulted in a sharp increase in



Monthly mean discharge of Red River of the North at Grand Forks, N. Dak. (Drainage area, 30,100 square miles.)

flow of Cannonball River at Breien, from 12 times median in January to 22 times median during February. Cumulative runoff at that station since October 1, 1973 (beginning of 1974 water year) has been more than 5 times the median runoff for the 5-month period.

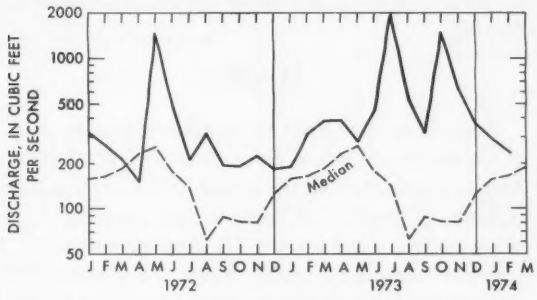
In eastern Iowa, flow of Cedar River at Cedar Rapids decreased contraseasonally, but remained in the above-normal range where it has been in 19 of the past 20 months. Elsewhere in the State, monthly mean flows of Des Moines River at Keosauqua, in the southeast, Nishnabotna River above Hamburg, in the southwest, and Winnebago River at Mason City, in north-central Iowa, remained above the normal range and were 3 to 4 times their February medians.

In central Kansas and eastern Nebraska, streamflow generally remained in the above-normal range for the 5th consecutive month. In the Republican River basin in southwestern Nebraska, two reservoirs, Swanson Lake and Harlan County Lake, have been filled to the upper limits of their conservation pools and outflow at monthend was essentially equal to inflow. The other three reservoirs in the basin were filling slowly.

In Missouri, flow of tributaries to the Missouri River and upper reaches of Mississippi River, remained above the normal range. Cumulative runoff of Grand River near Gallatin, in the northwestern part of the State, was more than 11 times median during the first 5 months (October through February) of the current water year.

In southeastern Texas, monthly mean discharge of Neches River near Rockland decreased contraseasonally from the high flow of January, remained above the

normal range for the 11th consecutive month, and was nearly twice the February median. Below-normal flows occurred in small areas near Fort Worth, Dallas, and San Angelo. In the south-central part of the State, flow of Guadalupe River near Spring Branch decreased and was in the normal range for the first time in 7 months. Cumulative runoff at this station since October 1973 has been 5 times median (see graph).



Monthly mean discharge of Guadalupe River near Spring Branch, Texas. (Drainage area, 1,315 square miles.)

In northern and southeastern Louisiana, monthly mean flows were 2 to 3 times the February medians, and in the above-normal range. Flows generally decreased in all parts of the State but flooding continued in the Black River basin near Jonesville, in the northeast, where approximately 50 families have been evacuated. Localized flooding occurred February 21 and 22 in Shreveport and Ruston as a result of runoff from intense rains in those cities.

In Manitoba, flow at the index station, Waterhen River below Waterhen Lake, decreased seasonally and remained in the normal range. The level of Lake Winnipeg at Gimli averaged 714.64 feet above mean sea level, 1.72 feet above the long-term mean for February, and 0.32 foot higher than last month.

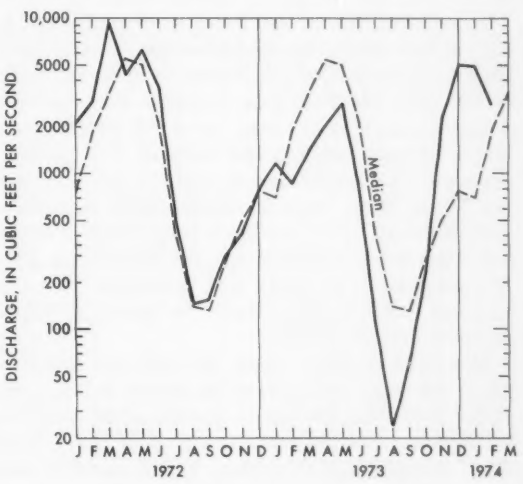
Ground-water levels generally rose in Kansas, Nebraska, and Louisiana (but fell slightly in terrace aquifer in northwest); and remained about the same in North Dakota and Iowa. Monthend levels were above average in Iowa and Nebraska (except areas irrigated by ground water); and were near average in North Dakota. In Texas, levels declined in the Edwards Limestone at Austin and San Antonio and in the bolson deposits at El Paso; and rose in the Evangeline aquifer at Houston. Monthend levels were above average at Austin (new high for February) and San Antonio; and lowest of record for February at Houston and El Paso.

WEST

[Alberta and British Columbia; Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming]

STREAMFLOW GENERALLY DECREASED IN ALL PARTS OF THE REGION BUT REMAINED IN THE ABOVE-NORMAL RANGE IN A LARGE AREA CENTERED ON CENTRAL IDAHO, AND IN SMALLER AREAS IN COLORADO AND CALIFORNIA. FLOWS WERE BELOW THE NORMAL RANGE IN LARGE PARTS OF ARIZONA AND NEW MEXICO, AND IN NORTH-COASTAL BRITISH COLUMBIA.

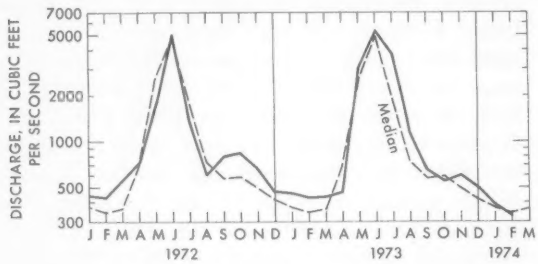
High carryover flows from January, augmented by snowmelt runoff during February, resulted in a continuation of above-normal streamflow in Idaho and parts of the adjacent States of Montana, Washington, Oregon, Utah, and Wyoming. Flows of Spokane River at Spokane, Washington, and Salmon River at White Bird, Idaho, decreased from their highest-of-record monthly mean flows in January, but remained above the normal range for the 3d and 4th consecutive months, respectively. In western Montana, mean flow of Clark Fork at St. Regis was appreciably less than that of January, but remained in the above-normal range. Similarly, in central Oregon, monthly mean flow of John Day River at Service Creek decreased sharply but remained above median for the 4th consecutive month (see graph). The cumulative runoff at that index station since November 1, 1973, has been 4 times the median for the 4-month



Monthly mean discharge of John Day River at Service Creek, Oreg. (Drainage area, 5,090 square miles.)

period. In western Wyoming and adjacent eastern Idaho, monthly mean flow of Snake River, as measured near Heise, Idaho, decreased seasonally and remained above the normal range for the 4th consecutive month. In northern Utah, flow of Big Cottonwood Creek near Salt

Lake City decreased slightly, but continued in the above-normal range for the 7th consecutive month. In the Columbia River basin of northern Oregon, eastern Washington, and southern British Columbia, flow of Columbia River, as measured at The Dalles, Oregon, decreased but was nearly double the February median and above the normal range for the 5th consecutive month. Flows remained above the normal range also in the Arkansas River and Clear Creek basins (east of the Continental Divide) in Colorado, and in West Walker River basin in the Sierra Nevada of eastern California. On the west slope of the Continental Divide in Colorado, monthly mean flow of Roaring Fork at Glenwood Springs decreased seasonally and was below median for the first month since October 1973 (see graph).



Monthly mean discharge of Roaring Fork River at Glenwood Springs, Colo. (Drainage area, 1,451 square miles.)

In Arizona, flow of San Pedro River at Charleston, in the extreme south, remained below the normal range for the 8th consecutive month. Elsewhere in the State, flows at all other index stations decreased into the below-normal range. Monthly mean flows also were below the normal range in western and northern New Mexico, in the upper Rio Grande basin in southern Colorado, and in the Virgin River basin in northwestern Arizona and southwestern Utah. In northern Utah, the level of Great Salt Lake rose 0.35 foot during the month (to 4,200.30 feet above mean sea level), 0.85 foot higher than a year ago, and 1.9 feet higher than the average (1904–72) monthly level for February.

Monthend reservoir storage generally was above average in the major reservoirs of the region. In Idaho, some stored water was released to provide additional storage for flood-control purposes. Contents of the Colorado River Storage Project increased 82,200 acre-feet during the month.

Ground-water levels generally rose in Utah (except in extreme north) and southern California (except in some heavily pumped areas), eastern Washington, and northern Idaho. Levels declined in Montana, western Washington, southern Idaho, north-central Nevada, and southern New Mexico. Monthend levels were above average in Montana, Washington, and north-central Nevada, and in the Snake Plain aquifer in Idaho; near average in southern California; and below average in southern New Mexico.

ALASKA

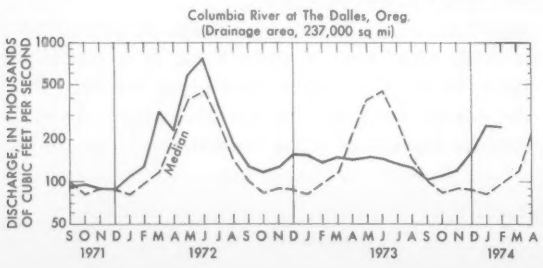
Streamflow continued to decrease seasonally except in the southeast, where mean flow of Gold Creek near Juneau increased from the lowest-of-record flow during January (7 percent of median) but remained in the below-normal range for the 4th consecutive month. In the east-central part of the State, the monthly mean flow of 5,000 cfs on Tanana River at Nenana (drainage area, 25,600 square miles) was lowest for the month since records began in 1963, and below the normal range for the 2d consecutive month. In south-central Alaska, flow of Little Susitna River near Palmer decreased seasonally but high carryover flow from January held the monthly mean February discharge in the above-normal range. Elsewhere in the State, flows were in the normal range and only slightly below the February medians.

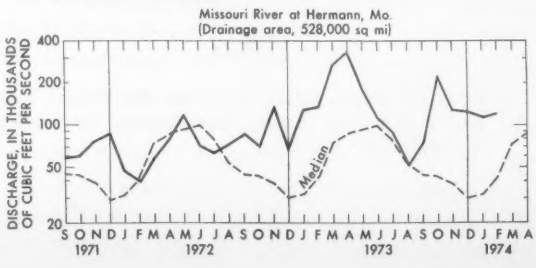
Ground-water levels in the Anchorage area rose in the shallow aquifers and changed only slightly in the deep aquifer.

HAWAII

Streamflow increased and was in the normal range in all parts of the State. At the index station, Waiakea Stream near Mountain View, in eastern Hawaii, monthly mean flow during February was more than 3 times the extremely low flow (38 percent of median) of January. In eastern Maui, flow at the index station, Honopou Stream near Huelo, also increased sharply and was slightly above the February median. Cumulative runoff at that site for the first five months of the current water year (October 1973 through February 1974) was only 59 percent of the median cumulative runoff for that period.

HYDROGRAPHS OF TWO LARGE RIVERS





USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF FEBRUARY 1974

[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	End of Jan. 1974	End of Feb. 1974	End of Feb. 1973	Average for end of Feb.	Normal maximum
	Percent of normal maximum				
NORTHEAST REGION					
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs (P)	55	59	72	57	223,400 (a)
QUEBEC					
Gouin (P)	76	65	51	47	10,865 ac-ft
Allard (P)	78	69	70	28	438 ac-ft
MAINE					
Seven reservoir systems (MP)	76	62	60	38	178,489 mcf
NEW HAMPSHIRE					
Lake Winnipesaukee (PR)	79	61	48	50	7,200 mcf
Lake Francis (FPR)	64	33	31	29	4,326 mcf
First Connecticut Lake (P)	63	26	22	17	3,330 mcf
VERMONT					
Somerset (P)	77	66	53	49	2,500 mcf
Harriman (P)	68	38	34	31	5,060 mcf
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	79	80	74	68	3,394 mcf
NEW YORK					
Great Sacandaga Lake (FPR)	57	38	44	35	34,270 mcf
Indian Lake (FMP)	68	45	34	40	4,500 mcf
New York City reservoir system (MW)	95	98	97	.....	547,500 mg
NEW JERSEY					
Wanaque (M)	95	97	97	79	27,730 mg
PENNSYLVANIA					
Wallenpaupack (P)	74	60	48	49	6,875 mcf
Pymatuning (FMR)	90	82	76	86	8,191 mcf
MARYLAND					
Baltimore municipal system (M)	98	99	100	88	85,340 mg
SOUTHEAST REGION					
NORTH CAROLINA					
Bridgewater (Lake James) (P)	91	96	89	83	12,580 mcf
High Rock Lake (P)	100	75	70	79	10,230 mcf
Narrows (Badin Lake) (P)	99	99	97	102	5,616 mcf
SOUTH CAROLINA					
Lake Murray (P)	85	83	82	67	70,300 mcf
Lakes Marion and Moultrie (P)	78	93	91	74	81,100 mcf
SOUTH CAROLINA--GEORGIA					
Clark Hill (FP)	71	70	69	63	75,360 mcf
GEORGIA					
Burton (PR)	75	75	89	67	104,000 ac-ft
Lake Sidney Lanier (FMPR)	63	64	60	56	1,686,000 ac-ft
Sinclair (MPR)	97	92	88	85	214,000 ac-ft
ALABAMA					
Lake Martin (P)	76	85	82	76	1,373,000 ac-ft
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	56	48	44	36	1,156,000 cfsd
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	53	54	49	40	1,452,000 cfsd
Douglas Lake (FPR)	16	23	19	22	703,100 cfsd
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	53	57	53	49	512,200 cfsd
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	61	60	56	46	745,200 cfsd
WESTERN GREAT LAKES REGION					
WISCONSIN					
Chippewa and Flambeau (PR)	39	39	36	22	15,900 mcf
Wisconsin River (21 reservoirs) (PR)	18	12	29	15	17,400 mcf
MINNESOTA					
Mississippi River headwater system (FMR)	28	25	16	18	1,640,000 ac-ft

Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	End of Jan. 1974	End of Feb. 1974	End of Feb. 1973	Average for end of Feb.	Normal maximum
	Percent of normal maximum				
MIDCONTINENT REGION					
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	85	83	88	.....	22,640,000 ac-ft
NEBRASKA					
Lake McConaughy (IP)	82	81	82	73	1,948,000 ac-ft
OKLAHOMA					
Keystone (FPR)	113	109	98	88	661,000 ac-ft
Lake O' The Cherokees (FPR)	99	86	94	78	1,492,000 ac-ft
Tenkiller Ferry (FPR)	107	106	104	84	628,200 ac-ft
Lake Altus (FIMR)	49	50	14	51	134,500 ac-ft
Eufaula (FPR)	98	102	98	80	2,378,000 ac-ft
OKLAHOMA--TEXAS					
Lake Texoma (FMPRW)	100	101	101	86	2,722,000 ac-ft
TEXAS					
Possum Kingdom (IMPRW)	81	81	91	76	724,500 ac-ft
Buchanan (IMPW)	82	82	73	77	955,200 ac-ft
Bridgeport (IMW)	52	52	54	38	386,400 ac-ft
Eagle Mountain (IMW)	98	96	94	87	190,300 ac-ft
Medina Lake (I)	100	99	94	47	254,000 ac-ft
Lake Travis (FIMPRW)	100	100	102	78	1,144,000 ac-ft
Lake Kemp (IMW)	60	59	42	75	319,600 ac-ft
THE WEST					
ALBERTA					
Spray (P)	51	....	55	32	210,000 ac-ft
Lake Minnewanka (P)	73	....	55	42	199,700 ac-ft
St. Mary (I)	65	....	70	64	320,800 ac-ft
WASHINGTON					
Franklin D. Roosevelt Lake (IP)	15	22	73	64	5,232,000 ac-ft
Lake Chelan (PR)	41	33	21	36	676,100 ac-ft
IDAHO--WYOMING					
Upper Snake River (7 reservoirs) (IMP)	73	73	73	73	4,282,000 ac-ft
WYOMING					
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	74	75	66	42	3,056,200 ac-ft
Buffalo Bill (IP)	48	44	61	63	421,300 ac-ft
Boysen (FIP)	89	83	64	65	802,000 ac-ft
Keyhole (F)	78	82	84	35	199,900 ac-ft
COLORADO					
John Martin (FIR)	5	7	5	19	364,400 ac-ft
Colorado–Big Thompson project (I)	82	82	73	54	722,600 ac-ft
Taylor Park (IR)	60	60	37	55	106,000 ac-ft
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Navajo, and Blue Mesa Reservoirs (IFPR)	70	70	52	.....	31,276,500 ac-ft
UTAH--IDAHO					
Bear Lake (IPR)	77	77	77	55	1,421,000 ac-ft
CALIFORNIA					
Hetch Hetchy (MP)	56	48	22	27	360,400 ac-ft
Lake Almanor (P)	101	98	64	46	1,036,000 ac-ft
Shasta Lake (FIPR)	87	81	77	74	4,377,000 ac-ft
Millerton Lake (FI)	86	95	85	64	503,200 ac-ft
Pine Flat (FI)	64	69	46	53	1,014,000 ac-ft
Isabella (FIR)	58	45	14	25	551,800 ac-ft
Folsom (FIP)	63	61	60	58	1,000,000 ac-ft
Lake Berryessa (FIMW)	103	101	97	87	1,600,000 ac-ft
Clair Engle Lake (Lewiston) (P)	103	98	86	84	2,438,000 ac-ft
CALIFORNIA--NEVADA					
Lake Tahoe (IPR)	83	81	73	53	744,600 ac-ft
NEVADA					
Rye Patch (I)	72	79	88	.....	157,200 ac-ft
ARIZONA--NEVADA					
Lake Mead and Lake Mohave (FIMP)	78	77	76	63	27,970,000 ac-ft
ARIZONA					
San Carlos (IP)	56	54	54	16	1,093,000 ac-ft
Salt and Verde River system (IMPR)	75	73	84	42	2,073,000 ac-ft
NEW MEXICO					
Conchas (FIR)	73	71	63	77	352,600 ac-ft
Elephant Butte and Caballo (FIPR)	36	37	18	29	2,539,000 ac-ft

[a]Thousands of kilowatt-hours

METRIC EQUIVALENTS OF UNITS USED IN THE WATER RESOURCES REVIEW

(Round-number conversions, to nearest four significant figures)

1 foot = 0.3048 meter 1 mile = 1.609 kilometers
1 acre = 0.4047 hectare = 4,047 square meters
1 square mile = 259 hectares = 2.59 square kilometers
1 acre-foot (ac-ft) = 1,233 cubic meters
1 million cubic feet (mcf) = 28,320 cubic meters

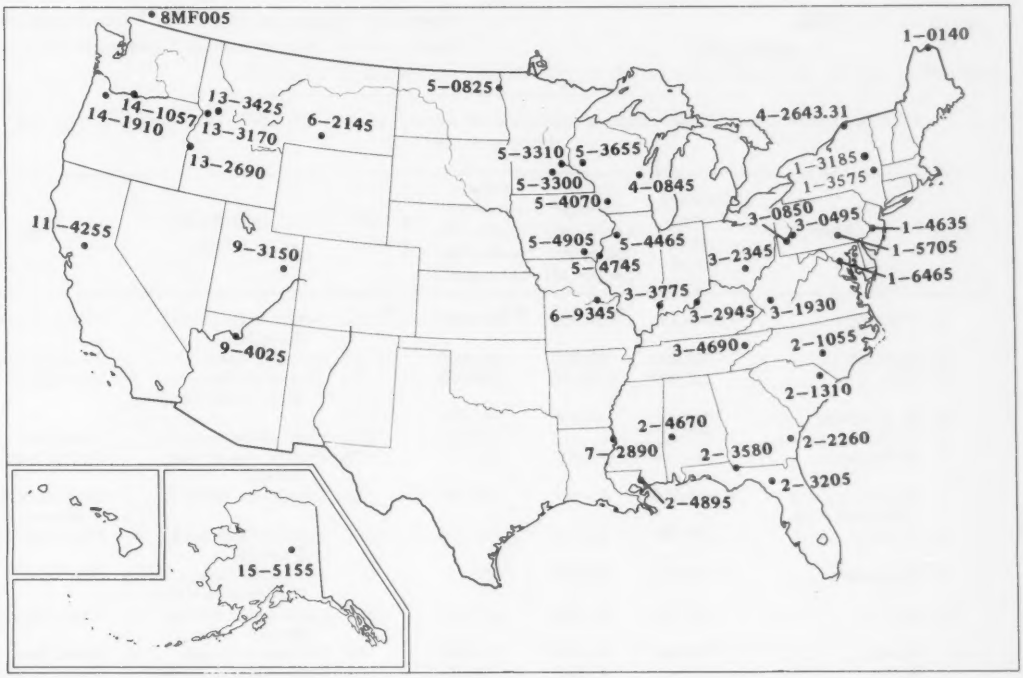
1 cubic foot per second (cfs) = 0.02832 cubic meters per second = 1.699 cubic meters per minute
1 second-foot-day (cfsd) = 2,447 cubic meters per day
1 million gallons (mg) = 3,785 cubic meters = 3.785×10^6 liters
1 million gallons per day (mgd) = 694.4 gallons per minute (gpm) = 2.629 cubic meters per minute = 3,785 cubic meters per day

FLOW OF LARGE RIVERS DURING FEBRUARY 1974

Station number	Stream and place of determination	Drainage area (square miles)	Mean annual discharge through September 1970 (cfs)	February 1974					
				Monthly discharge (cfs)	Percent of median monthly 1941–70	Change in discharge from previous month (percent)	Discharge near end of month		
							(cfs)	(mgd)	Date
1–0140	St. John River below Fish River at Fort Kent, Maine.	5,690	9,397	3,618	188	−42	2,450	1,600	28
1–3185	Hudson River at Hadley, N.Y	1,664	2,791	3,104	181	−19	3,800	2,500	28
1–3575	Mohawk River at Cohoes, N.Y	3,456	5,450	6,036	125	−32	4,400	2,800	28
1–4635	Delaware River at Trenton, N.J	6,780	11,360	15,686	148	−17	21,100	13,600	27
1–5705	Susquehanna River at Harrisburg, Pa.	24,100	33,670	42,890	117	−34	40,700	26,300	28
1–6465	Potomac River near Washington, D.C.	11,560	[1] 10,640	11,300	81	−57	10,000	6,500	28
2–1055	Cape Fear River at William O. Huske Lock near Tarheel, N.C.	4,810	4,847	10,600	119	+36	5,440	3,500	28
2–1310	Pee Dee River at Peedee, S.C	8,830	9,098	23,050	171	+37	21,400	13,800	25
2–2260	Altamaha River at Doctortown, Ga.	13,600	13,380	31,920	169	+117	48,000	31,000	27
2–3205	Suwannee River at Branford, Fla	7,740	6,775	5,650	73	+46	7,650	4,900	23
2–3580	Apalachicola River at Chattahoochee, Fla.	17,200	21,690	55,100	186	+41	51,000	33,000	26
2–4670	Tombigbee River at Demopolis lock and dam near Coatopa, Ala.	15,400	21,700	82,650	178	−15	82,000	53,000	25
2–4895	Pearl River near Bogalusa, La	6,630	8,533	45,910	305	−4	35,000	22,600	28
3–0495	Allegheny River at Natrona, Pa	11,410	[1] 18,700	23,020	83	−40	29,100	18,800	26
3–0850	Monongahela River at Braddock, Pa.	7,337	[1] 11,950	14,150	79	−60	12,800	8,300	26
3–1930	Kanawha River at Kanawha Falls, W.Va.	8,367	12,370	16,580	84	−54	17,500	11,300	27
3–2345	Scioto River at Higby, Ohio	5,131	4,337	7,328	95	−46	7,340	4,700	26
3–2945	Ohio River at Louisville, Ky[2]	91,170	110,600	151,500	83	−54	165,100	106,700	26
3–3775	Wabash River at Mount Carmel, Ill.	28,600	26,310	70,540	213	−10	66,000	42,700	28
3–4690	French Broad River below Douglas Dam, Tenn.	4,543	[1] 6,528	14,820	140	−12	.....	.....	....
4–0845	Fox River at Rapide Croche Dam, near Wrightstown, Wis.[2]	6,150	4,142	5,520	153	+58	.....	.....	....
4–2643.31	St. Lawrence River at Cornwall, Ontario–near Massena, N.Y.[3]	299,000	239,100	265,000	117	+10	290,000	187,400	27
5–0825	Red River of the North at Grand Forks N. Dak.	30,100	2,439	1,989	271	+20	2,150	1,400	28
5–3300	Minnesota River near Jordan, Minn ..	16,200	3,306	1,180	221	+11	2,100	1,400	27
5–3310	Mississippi River at St. Paul, Minn ...	36,800	[1] 10,230	6,460	151	−5	6,900	4,500	26
5–3655	Chippewa River at Chippewa Falls, Wis.	5,600	5,062	3,336	114	+12	.....	.....	....
5–4070	Wisconsin River at Muscoda, Wis	10,300	8,457	6,586	108	+2	.....	.....	....
5–4465	Rock River near Joslin, Ill	9,520	5,288	12,850	265	+3	11,800	7,600	28
5–4745	Mississippi River at Keokuk, Iowa ...	119,000	61,210	74,380	186	+6	71,000	45,900	28
5–4905	Des Moines River at Keosauqua, Iowa.	14,038	5,220	9,200	289	+10	7,760	5,000	28
6–2145	Yellowstone River at Billings, Mont.	11,795	6,754	2,624	99	−11	2,650	1,700	28
6–9345	Missouri River at Hermann, Mo	528,200	78,480	117,700	258	+3	156,000	100,800	25
7–2890	Mississippi River near Vicksburg, Miss.[4]	1,144,500	552,700	1,374,000	211	+13	1,076,000	695,400	25
9–3150	Green River at Green River, Utah ...	40,600	6,369	3,961	168	+46	2,740	1,800	28
9–4025	Colorado River near Grand Canyon, Ariz.	137,800	.....	5,901	.....	−59	.....	.....	....
11–4255	Sacramento River at Verona, Calif ...	21,257	18,370	44,980	118	−30	35,300	22,800	22
13–2690	Snake River at Weiser, Idaho	69,200	17,670	22,850	126	+3	23,900	15,500	26
13–3170	Salmon River at White Bird, Idaho ..	13,550	11,060	6,285	127	−32	6,000	3,900	26
13–3425	Clearwater River at Spalding, Idaho ..	9,570	15,320	23,420	257	−18	28,000	18,000	26
14–1057	Columbia River at The Dalles, Oreg.[5]	237,000	194,000	238,900	189	−2	.....	.....	....
14–1910	Willamette River at Salem, Oreg	7,280	23,370	47,150	108	−40	54,460	35,200	24–28
15–5155	Tanana River at Nenana, Alaska	27,500	24,040	5,000	81	−8	5,000	3,200	28
8MF005	Fraser River at Hope, British Columbia.	78,300	95,300	33,100	111	−6	32,000	20,700	27

[1] Adjusted.
[2] Records furnished by Corps of Engineers.
[3] Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.
[4] Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5] Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

SELECTED STREAM-GAGING STATIONS ON LARGE RIVERS



Location of stream-gaging stations on large rivers listed in table on page 8.

WATER RESOURCES REVIEW — FEBRUARY 1974

Cover map shows generalized pattern of streamflow for February based on 22 index stream-gaging stations in Canada and 130 index stations in the United States. Alaska and Hawaii inset maps show streamflow only at the index gaging stations which are located near the points shown by the arrows.

Streamflow for February 1974 is compared with flow for February in the 30-year reference period 1931–60 or 1941–70. Streamflow is considered to be *below the normal range* if it is within the range of the low flows that have occurred 25 percent of the time (below the lower quartile) during the reference period. Flow for February is considered to be *above the normal range* if it is within the range of the high flows that have occurred 25 percent of the time (above the upper quartile).

Flow higher than the lower quartile but lower than the upper quartile is described as being within the *normal range.* In the Water Resources Review the median is obtained by ranking the 30 flows of the reference period in their order of magnitude; the highest flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th highest flows is the median.

The normal is an average (but not an arithmetic average) or middle value; half of the time you would expect the February flows to be below the median and half of the time to be above the median. Shorter reference periods are used for the Alaska index stations because of the limited records available.

Statements about *ground-water levels* refer to conditions near the end of February. Water level in each key observation well is compared with average level for the end of February determined from the entire past record for that well or from a 20-year reference period, 1951–70. *Changes in ground-water levels,* unless described otherwise, are from the end of January to the end of February.

The Water Resources Review is published monthly. Special-purpose and summary issues are also published. Issues of the Review are free on application to the Water Resources Review, U.S. Geological Survey, Reston, Virginia 22092.

This issue was prepared by J.C. Kammerer, H.D. Brice, T.H. Woodard and L.C. Fleshmon from reports of the field offices, March 7, 1974.

LARGE RIVERS OF THE UNITED STATES

The accompanying abstract and table are from the report, *Large rivers of the United States*, by K. T. Iseri and W. B. Langbein: U.S. Geological Survey Circular 686, 10 pages, 1974. The report may be obtained free upon request to the U.S. Geological Survey, Branch of Distribution, 1200 S. Eads St., Arlington, Va. 22202.

ABSTRACT

Information on the 28 largest rivers in the United States [largest Alaskan river (Yukon) and 27 largest in conterminous U.S.] is presented for the base periods 1931–60 and 1941–70. Drainage area, stream length, source, and mouth are included. Table 1 shows the average discharge at downstream gaging stations. Table 2 [reproduced below] lists large rivers in order of average discharge at the mouth, based on the period 1941–70.

Large rivers in the United States in order of average discharge at mouth, 1931–60, 1941–70. Order based on average discharge for 1941–70

Rank	River	Drainage area (square miles)	Average discharge (1931–60) (cubic feet per second)	Average discharge (1941–70) (cubic feet per second)	Length (miles)	Most distant source	Mouth
1	Mississippi	[1]1,247,266	[2]650,000	[2,3]640,000	[4]3,710	Source of Red Rock River, Mont.	Gulf of Mexico.
2	Columbia	258,000	253,000	262,000	1,243	Columbia Lake, B.C	Pacific Ocean.
3	Ohio	203,900	258,000	258,000	1,306	Source of Allegheny River, Potter Co., Pa.	Mississippi River.
4	St. Lawrence	[5]302,000	[5]238,000	[5]243,000	.....	.....	
5	Yukon	327,600	.....	[6]240,000	1,770	Coast Mountains, B.C	Bering Sea.
6	Atchafalaya[7]	95,105	161,000	183,000	135	Eastern edge of New Mexico.	Gulf of Mexico.
7	Mississippi above Missouri River.	171,600	91,400	98,400	1,170	Lake Itasca, Minn	Confluence with Missouri River.
8	Missouri	529,400	69,300	76,300	2,533	Source of Red Rock River, Mont.	Mississippi River.
9	Tennessee	40,910	64,000	[8]	900	Southwest Virginia, North Fork Holston River.	Ohio River.
10	Red	93,244	64,000	62,300	1,270	Eastern edge of New Mexico.	Atchafalaya River.
11	Mobile	[9]43,800	61,100	61,400	780	Northwest Georgia	Mobile Bay.
12	Snake	109,000	49,500	50,000	1,038	Ocean Plateau, Teton Co., Wyo.	Columbia River.
13	Arkansas	160,600	41,900	45,100	1,450	Lake Co., Colo	Mississippi River.
14	Susquehanna	27,570	38,200	37,190	444	Otsego Lake, Otsego Co., N.Y.	Chesapeake Bay.
15	Willamette	11,200	34,170	35,660	270	Tumblebug Creek, Douglas Co., Oreg.	Columbia River.
16	Alabama	22,600	32,000	32,400	735	Northwest Georgia	Mobile River.
17	White	28,000	32,300	32,100	720	Madison Co., Ark	Mississippi River.
18	Wabash	33,150	30,000	30,400	529	Darke Co., Ohio	Ohio River.
19	Pend Oreille	25,820	27,600	29,900	490	Near Butte, Mont	Columbia River.
20	Tombigbee	20,100	27,400	27,300	525	Northeast Mississippi	Mobile River.
21	Cumberland	18,080	26,900	[8]	720	Poor Fork, Letcher Co., Ky.	Ohio River.
22	Sacramento	27,100	.....	.....	377	Siskiyou Co., Calif	Suisun Bay.
23	Apalachicola	19,600	24,200	24,700	524	Source of Chattahoochee River, Towns Co., Ga.	Gulf of Mexico.
24	Illinois	27,900	22,600	22,800	420	Source of Kankakee River, St. Joseph Co., Ind.	Mississippi River.
25	Colorado	[10]242,900	.....	.....	[10]1,360	Rocky Mountain National Park, Colo.	Gulf of California.
26	Hudson	13,370	21,300	19,500	306	Essex Co., N.Y	Upper New York Bay.
27	Allegheny	11,700	19,800	19,290	325	Source of Allegheny River, Potter Co., Pa.	Ohio River.
28	Delaware	[11]11,440	[12]19,200	17,200	[11]390	Source of West Branch, Schoharie Co., N.Y.	Delaware Bay.

[1] At Baptisfe Collette Bayou, La.

[2] About 25 percent of the flow of the Mississippi River system occurs in the Atchafalaya River.

[3] Combined flow of Mississippi and Atchafalaya Rivers is 640,000 cubic feet per second. Flow of Mississippi River channel at mouth is 453,000 cubic feet per second.

[4] Measured from the mouth of the Mississippi River and along its watercourse and that of the Missouri River to the source of Red Rock River in Montana. The length from mouth of Mississippi River to its source in *Minnesota* is 2,340 miles.

[5] At international boundary, lat. 45°. Includes flow of St. Regis River.

[6] Average is for 1957–70 period; station operated only since 1956.

[7] Continuation of Red River.

[8] Interbasin diversion beginning June 1966 between Lake Barkley on Cumberland River and Lake Kentucky on Tennessee River through Barkley-Kentucky Canal.

[9] At Bankhead Tunnel.

[10] At Arizona-Sonora boundary; natural flow not accurately known because of large depletions for irrigation.

[11] At Liston Point on Delaware Bay.

[12] Does not include flow of Chesapeake and Delaware canal.

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